Document 00910

ADDENDUM NO. 1

Date of Addendum: 2/19/16

PROJECT NAME: 24-Inch Slipline along Hillcroft in Quail Run Subdivision

PROJECT NO: WBS No. S-000900-0169-4

BID DATE: February 25, 2016 (There is no change to the Bid Date.)

FROM: J. Timothy Lincoln, P.E., City Engineer
City of Houston, Department of Public Works and Engineering
611 Walker
Houston, Texas 77002
Attn: *Kevin D. Tran*, P.E., Project Manager

TO: Prospective Bidders

This Addendum forms a part of the Bidding Documents and will be incorporated into the Contract documents, as applicable. Insofar as the original Project Manual and Drawings are inconsistent, this Addendum governs.

This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below. Change bars (|) are provided in the outside margins of pages from the Project Manual to indicate where changes have been made; no change bars are provided in added Sections. Reissued Drawing Sheets show the Addendum number below the title block and changes in the Drawing are noted by a revision mark and enclosed in a revision cloud.

CHANGES TO PROJECT MANUAL

1. Section 00010 – Table of Contents. Replace entire Section.

BIDDING REQUIREMENTS

2. Document 00410 – Bid Form. Replace entire Document.

SPECIFICATIONS

3. Section 02505S – High Density Polyethylene (HDPE) Solid and Profile Wall Pipe. Add supplementary section.
4. Section 02506S – Polyvinyl Chloride Pipe. Add supplementary section.
5. Section 02551 – Sliplining Water Lines. Replace entire Section.

CHANGES TO DRAWINGS

1. Sheet 20 – At approximate station 49+55, add Critical Locate callout, referencing Specification Section 02317, to locate end of existing 24-inch steel pipe and AT&T Conduit.

END OF ADDENDUM NO. 1

STATE OF TEXAS
GREGORY J. HENRY
91826
LICENSED
PROFESSIONAL ENGINEER
2/19/16
Firm F-2614
Lockwood, Andrews & Newnam, Inc.

DATED: _____
Ravi Kaleyatodi, P.E., CPM
Senior Assistant Director
Department of Public Works and Engineering

END OF DOCUMENT

Document 00410A

BID FORM – PART A

To: **The Honorable Mayor and City Council of the City of Houston**
City Hall Annex
900 Bagby Street
Houston, Texas 77002

Project: 24-inch Slipline along Hillcroft in Quail Run Subdivision
Project No.: WBS No. S-000900-0169-4
Bidder: _____
(Print or type full name of proprietorship, partnership, corporation, or joint venture.)

1.0 OFFER

A. Total Bid Price: Having examined the Project location and all matters referred to in Bid Documents for the Project, we, the undersigned, offer to enter into a Contract to perform the Work for the Total Bid Price shown on the signature page of this Document

B. Security Deposit: Included with the Bid is a Security Deposit in the amount of 10 percent of the Total Bid Price subject to terms described in Document 00200 – Instructions to Bidders.

C. Period for Bid Acceptance: This offer is open to acceptance and is irrevocable for 90 days from Bid Date. That period may be extended by mutual written agreement of the City and Bidder.

D. Addenda: All Addenda have been received. Modifications to Bid Documents have been considered and all related costs are included in the Total Bid Price.

E. Bid Supplements: The following documents are attached:

[X] Security Deposit *(as defined in Document 00200 – Instructions to Bidders)*
[X] Document 00450 - Bidder's Statement of MWBE/PDBE/DBE/SBE Status
[X] Document 00452 - Contractor's Submission List - Fair Campaign Ordinance Form A
[X] Document 00453 – Bidder's Statement of Residency (not required for AIP funded project)
[X] Document 00454 - Affidavit of Non-interest
[X] Document 00455 - Affidavit of Ownership or Control
[ ] Document 00456 - Bidder's Certificate of Compliance with Buy American Program (required for AIP funded project)
[X] Document 00457 – Conflicts of Interest Questionnaire (CIQ)
[ ] Document 00458 - Bidder's Certificate Regarding Foreign Trade Restriction
[ ] Document 00459 - Contractor's Statement Regarding Previous Contracts Subject to EEO
[X] Document 00460 – (POP 1) Pay or Play Acknowledgement Form
[X] Document 00470 – Bidders MWSBE Participation Plan (required unless no MWSBE participation goal is provided in Document 00800 (the "Goal"))
[X] Others as listed: Valid official letter from OBO with your designation as a City of Local Business (Bidder's participation Hire Houston First)

2.0 CONTRACT TIME

A. If offer is accepted, Contractor shall achieve Date of Substantial Completion within 176 days after Date of Commencement of the Work, subject to adjustments of Contract Time as provided in the Contract.

Document 00410B

BID FORM – PART B

1.0 TOTAL BID PRICE HAS BEEN CALCULATED BY BIDDER, USING THE FOLLOWING COMPONENT PRICES AND PROCESS (PRINT OR TYPE NUMERICAL AMOUNTS):

A. STIPULATED PRICE: $N/A

(Total Bid Price; minus Base Unit Prices, Extra Unit Prices, Cash Allowances and All Alternates, if any)

B. BASE UNIT PRICE TABLE:

Item No.	Spec Ref.	Base Unit Short Title	Unit of Measure	Estimated Quantity	Unit Price (this column controls)	Total in figures
GENERAL						
1	01502	Mobilization	LS	1	$50,000 (1)	$50,000(1)
2	01555	Traffic Control and Regulation	LS	1	$25,000(2)	$25,000(2)
3	01555	Flagmen	LS	1	$25,000(2)	$25,000(2)
4	01555	Install low profile concrete barriers	LF	100		
5	01555	Relocate low profile concrete barriers	LF	2,200		
6	01555	Remove low profile concrete barriers	LF	100		
7	01570	Filter fabric fence	LF	1,505		
8	01570	Inlet Protection Barrier	LF	216		
9	02260	Trench safety system for trench excavation	LF	605		
10	02233	Clearing and grubbing	AC	2		
11	01110	Remove and replace existing security fencing and provide temporary fencing	LS	1		
12	02921	Hydromulch seeding	AC	0.4		
13	01562	Tree and plant protection	LS	1		

Bidder's Initials [ ]

Item No.	Spec Ref.	Base Unit Short Title	Unit of Measure	Estimated Quantity	Unit Price (this column controls)	Total in figures
WATER LINE REHABILITATION						
14	02525	16-inch by 16-inch diameter tapping sleeve and valve	EA	1		
15	02511 02513	24-inch diameter wet connection	EA	7		
16	02516	Cut, plug, and abandon existing 12-inch diameter water line	EA	1		
17	02516	Cut, plug, and abandon existing 16-inch diameter water line	EA	1		
18	02525	12-inch by 12-inch diameter tapping sleeve and valve, with box	EA	1		
19	02221	Remove and dispose of 24-inch diameter water line	LF	605		
20	02511	16-inch diameter water line by open-cut	LF	605		
21	02551	16-inch diameter water line by sliplining	LF	3,923		
22	02522	Remove 24-inch diameter butterfly valve	EA	3		
23	02521	16-inch gate valve with box	EA	4		
24	02551	Pipe Dewatering	LF	4,515		
25	02221	Remove and dispose of 2-inch combination air valve assembly with manhole	EA	9		
26	02524	2-inch combination air valve assembly with vent piping and manhole	EA	9		
27	02520	Remove and salvage existing fire hydrant valve	EA	9		
28	02520	Fire hydrant assembly, all depths, including 6-inch diameter gate valve and box	EA	11		
29	01110	Bollards for fire hydrant assembly	EA	7		

Item No.	Spec Ref.	Base Unit Short Title	Unit of Measure	Estimated Quantity	Unit Price (this column controls)	Total in figures
30	02520	6-inch diameter fire hydrant branch by open-cut	LF	66		
31	16640	Cathodic Protection System	LS	1		
PAVEMENT						
32	02221	Removing and disposing of Concrete pavements (all thickness, w/ or w/o Asphalt, including base & Subgrade, w/ or w/o curb, all depth)	SY	90		
33	02951	Pav Repairs/replacement with base material/Asph surface	SY	90		
TOTAL BASE UNIT PRICES						

REST OF PAGE INTENTIONALLY LEFT BLANK

C. EXTRA UNIT PRICE TABLE:

Item No.	Spec Ref.	Extra Unit Short Title	Unit of Measure	Estimated Quantity	Unit Price (this column controls)	Total in figures
34	02318	Excavation around obstructions	CY	140	$20[2]	$2,800[2]
35	02318	Extra hand excavation	CY	320	$10[2]	$3,200[2]
36	02631	Extra remove and replace 24-inch RCP Storm Sewer	LF	30	$100[2]	$3,000[2]
37	02631	Extra remove and replace 48" Storm Sewer	LF	50	$200[2]	$10,000[2]
38	02221	Removing and disposing of Concrete pavements (all thickness, w/ or w/o Asphalt, including base & subgrade, w/ or w/o curb, all depth)	SY	120	$10[2]	$1,200[2]
39	02951	Pav Repairs/Replacement with Base material/Conc surface	SY	120	$75[2]	$9,000[2]
40	02771	6-inch Concrete Curb (Monolithic)	LF	40	$7[2]	$280[2]
41	02775	Wheelchair Ramps and sidewalks, complete in place	SF	50	$15[2]	$750[2]
42	02551	Extra Access Pits	EA	5	$6,200[2]	$31,000[2]
43	02511	Remove and replace 12-inch AC water line	EA	6	$8,000[2]	$48,000[2]
44	02511	Remove and replace 8-inch AC water line	EA	1	$5,000[2]	$5,000[2]
TOTAL EXTRA UNIT PRICES						**$114,230.00[2]**

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D. CASH ALLOWANCE TABLE:

Item No.	Spec Ref.	Cash Allowance Short Title	Unit of Measure	Cash Allowance in figures (1)
45	01110	Street Cut Permit	CA	$750
46	01110	Fort Bend County Permitting and Bonds	CA	$7,500
TOTAL CASH ALLOWANCES				$8,250

REST OF PAGE INTENTIONALLY LEFT BLANK

Bidder's Initials [ ]

E. ALTERNATES TABLE:

Item No.	Spec Ref.	Alternate Short Title	Unit of Measure	Estimated Quantity	Unit Price (this column controls)	Total Price for Alternate in figures
TOTAL ALTERNATES						N/A

REST OF PAGE INTENTIONALLY LEFT BLANK

F. TOTAL BID PRICE: $_____
(Add Totals for Items A., B., C., D., and E. above)

2.0 SIGNATURES: By signing this Document, I agree that I have received and reviewed all Addenda and considered all costs associated with the Addenda in calculating the Total Bid Price.

Bidder: _____
(Print or type full name of your proprietorship, partnership, corporation, or joint venture.*)

**By: _____
Signature Date

Name: _____
(Print or type name) Title

Address: _____
(Mailing)

_____
(Street, if different)

Telephone and Fax Number: _____
(Print or type numbers)

* If Bid is a joint venture, add additional Bid Form signature sheets for each member of the joint venture.

** Bidder certifies that the only person or parties interested in this offer as principals are those named above. Bidder has not directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding.

Note: This document constitutes a government record, as defined by § 37.01 of the Texas Penal Code. Submission of a false government record is punishable as provided in § 37.10 of the Texas Penal Code.

Footnotes for Tables B through E:
(1) Fixed Unit Price determined prior to Bid. Cannot be adjusted by the Bidder.
(2) Minimum Bid Price determined prior to Bid. Can be increased by the Bidder by crossing out the Minimum and noting revised price on the line above.
(3) Maximum Bid Price determined prior to Bid. Can be decreased but not increased by Bidder by crossing out the Maximum and noting revised price on the line above. A Bid that increases the Maximum Bid Price may be found non-conforming and non-responsive.
(4) Fixed Range Bid Price determined prior to Bid. Unit Price can be adjusted by Bidder to any amount within the range defined by crossing out prices noted and noting revised price on the line above.

Document 00010

TABLE OF CONTENTS

NOTE: Bold capitalized Specification Sections are included in the City of Houston Department of Public Works and Engineering Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic located here: http://documents.publicworks.houstontx.gov/document-center/cat_view/88-engineering-and-construction/92-specifications/208-division-02-16-standard-specifications.html; and are incorporated in Project Manuals by reference as if copied verbatim. Documents listed "for filing" are to be provided by Bidder and are not included in this Project Manual unless indicated for example only. The Document numbers and titles hold places for actual documents to be submitted by Contractor during Bid, post-bid, or construction phase of the Project. Specification Sections marked with an asterisk (*) are amended by a supplemental specification, printed on blue paper and placed in front of the Specification it amends. Documents in the 200, 300 and 400 series of Division 00, except for Document 00410B – Bid Form, Part B, are not part of the Contract.

CONTRACTING REQUIREMENTS

END OF DOCUMENT

Section 02505S

HIGH DENSITY POLYETHYLENE (HDPE) SOLID AND PROFILE WALL PIPE

The following supplement modifies Section 02505 – High Density Polyethylene (HDPE) Solid and Profile Wall Pipe Standard Specification. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.

1.01 SECTION INCLUDES: Insert the following Paragraph 1.01 D:

D. High density polyethylene (HDPE) pipe and fittings for water main rehabilitation by sliplining 4-inch through 42-inch.

1.02 SECTION INCLUDES: Add the following to Paragraph 1.02 A.1:

d. Section 02551 – Sliplining Water Lines

1.03 REFERENCES: Add the following to Paragraph 1.03 and re-number existing paragraphs A through N.

B. AASHTO MP7 - Standard Specification for Corrugated Polyethylene Pipe, 1350 and 1500 mm diameter.

H. ASTM D 2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

J. ASTM D 2774 - Standard Practice for Underground Installation of Thermoplastic Pressure Piping.

N. ASTM D 3261- Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

S. AWWA C906 - Standard for Polyethylene Pressure Pipe and Fittings, 4-inch through 63-inch Diameter for Water Distribution.

1.04 SUBMITTALS: Delete Paragraph B and replace with the following:

B. Submit shop drawings showing design of pipe and fittings indicating alignment and grade, pipe length, laying dimensions, fabrication, fittings, flanges, gasket material, and special details.

C. Submit detailed calculations for pipe design.

D. Submit details of Pipe Joints and Jointing procedure for the HDPE pipe.

E. For water mains submit the following:

1. Submit Affidavit of Compliance with (ANSI/ AWWA C906, Sec. 1.5) for the HDPE to be installed.

2. Submit Special Quality Assurance Testing (ANSI/ AWWA C906, Sec. 4).

3. Submit certification of trained personnel performing fusion joining.

4. Submit design calculations for thrust restraint anchoring system, including connections to fittings, signed and sealed by Professional Engineer registered in the State of Texas.

1.05 QUALITY CONTROL: Insert the following Paragraph 1.05 D.

D. Pipe manufacturer to provide services of experienced, competent, and authorized representative to visit site to advise and consult Contractor during jointing and installation of pipe.

2.01 GENERAL: Insert the following Paragraph B and re-number existing B through G.

Select High Density Polyethylene (HDPE) pipe appropriate for proposed Work

B. For Water Mains provide Solid Wall HDPE as follows:

INSTALLATION SPEC NO.	GENERIC NAME	TRADE NAME OR MANUFACTURER	SDR (NUMERIC MAXIMUM)	SIZE RANGE
02550	Solid Wall Poly	Performance Pipe, a division of Chevron Phillips Chemical Company LP Approved Equal	DR 17	Nominal 16" Ductile Iron Pipe Size (DIPS) Min ID = 15.23"

2.04 MATERIALS FOR WATER MAINS: Insert Paragraph 2.04 and re-number existing 2.04 through 2.06.

Except as modified below, HDPE pressure pipe to conform to applicable requirements of ANSI/AWWA C906.

A. Pipe: Furnish and install complete with fittings, jointing materials, anchors, blocking, encasement, and other necessary appurtenances to safely carry loads imposed during installation.

1. Rated for 125 psi working pressure plus a minimum 50 psi surge pressure, SDR of 17, polyethylene material to be Code Designation PE 3408/4710 in accordance with ASTM D3350 and D2837. SDR ratio; ASTM D3035.

2. Mark pipe; AWWA C906, including Section 6.1.2.f. Diameters identified on Drawings are nominal inside diameter. Verify that selected pipe outside diameter is capable of being pulled into existing pipe using manufacturer's recommended methods.

3. Do not exceed 50 feet for each pipe section, unless otherwise approved by Project Manager.

B. Fittings:

1. Transitions to other pipe. Use flanged or MJ adapters

2. Tees, Outlets and Bends > 11¼°. Flanged, constructed and fabricated of ductile iron conforming to Section 02501 - Ductile Iron Pipe and Fittings, or steel in accordance with Specification Section 02518 – Steel Pipe and Fittings for Large Diameter Water Lines.

3. Provide ductile iron backer ring behind HDPE flanges and MJ adapters.

4. Bends ≤ 11¼°. ANSI/AWWA C906; material designation (ASTM D3350) PE 3408, and a Pressure Class 150 of the appropriate size and class for the pipe/material it is being connected to. Joints: ASTM D3261 thermal butt fusion joints. Alternatively, use flanged ductile iron conforming to Section 02501 - Ductile Iron Pipe and Fittings, or steel in accordance with Specification Section 02518 – Steel Pipe and Fittings for Large Diameter Water Lines.

C. Make curves by deflecting pipe, by use of beveled pipe ends, or by combination of two methods, unless otherwise indicated on Drawings. Do not exceed manufacturers recommended deflections. Provide bends for deflections greater than 5 degrees, unless otherwise recommended by manufacturer and approved by Project Manager.

2.07 TEST METHODS FOR WATER MAINS: Insert Paragraph 2.07 and re-number existing 2.07 to 2.08.

A. Conform to material verification requirements of AWWA C906.

3.01 GENERAL. Delete Paragraph 3.01 – INSTALLATION and replace with the following:

A. Conform to requirements of following Sections:

1. Section 02511 - Water Mains.

2. Section 02551 - Sliplining Water Lines.

B. Use only workmen trained in the installation of HDPE pipe.

C. Bedding and Backfill:

1. Direct buried sections: Provide cement stabilized sand backfill minimum of 12 inches above pipe, in accordance with Specification Section 02317 – Excavation and Backfill for Utilities.

2. Slipline sections: Conform to requirements of Section 02554 – Sliplining Grout.

D. Reject pipe with scratches, or other visible damage, that measure in depth greater than 10% of pipe wall thickness.

3.02 INSTALLATION

A. Install pipe in accordance with the manufacturer's recommended installation procedures and ASTM D 2774. Do not install with less than 3 feet of cover.

B. Do not store pipe uncovered in direct sunlight. Allow pipe temperature to approach ground temperature before each individual pipe section is terminally connected.

C. Joints: Join sections of HDPE pipe into continuous lengths above ground by thermal butt fusion method in accordance with AWWA C906 and pipe manufacturer's recommendations for the specified service. Fusion joints: meeting minimum requirements of manufacturer for cool down time and other fusing requirements. Socket fusion and extrusion welding or hot gas welding will not be accepted.

D. Cutting pipe: Comply with pipe manufacturer's recommendations. After cutting, leave end of pipe in accordance with manufacturer's recommendations.

E. Restrained Joints: Designed by manufacturer and approved by Project Manager. Restrain sufficient distance from each side of bend, tee, plug, or other fitting to resist thrust developed at design pressure for pipe. Design pressure:150 psi. When assembled outside of trench, allow pipe to cool in trench before backfilling.

3.03 CONNECTIONS

A. Make connections between new work and existing piping using suitable fittings. Make each connection with existing pipe at a time and under conditions which will least interfere with service to customers, and as authorized by Project Manager.

B. Connect to steel, ductile iron and prestressed concrete cylinder pipe as recommended by pipe manufacturer and detailed on Drawings.

C. Support connections to valves and ductile iron fittings separately from pipe on concrete pads as approved by Project Manager.

3.04 TESTING

A. Do not exceed hydrostatic testing total duration of 8 hours. Allow pipe to relax (without pressure) minimum 8 hours before retesting failed section.

END OF SECTION

Approved by:

Arthur Morris

Arthur Morris, P.E.
Supervising Engineer
Engineering and Construction Division

Date:

2/19/2016

Section 02506S

POLYVINYL CHLORIDE PIPE

The following supplement modifies Section 02506 – Polyvinyl Chloride Pipe Standard Specification. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.

1.01 SECTION INCLUDES: Insert the following Paragraph 1.01 D:

D. Fusible polyvinyl chloride pipe for water main rehabilitation by sliplining in nominal diameters 14 inches through 20 inches.

1.02 SECTION INCLUDES: Add the following to Paragraph 1.02 A.1:

e. Section 02551 – Sliplining Water Lines

1.03 REFERENCES: Add the following to Paragraph 1.03 and re-number existing paragraphs D through U.

D. ASTM D 1785 – Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe

E. ASTM D 2152 – Standard Test Method for Adequacy of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion

H. ASTM D 2837 – Standard Test Method for Obtaining Hydrostatic design basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermo Pipe Products

O. ASTM F 1674 – Standard Test Method for Joint Restraint Products for Use with PVC Pipe Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe

P. AWWA C 116/A 21.16 – Protective Fusion Bonded Epoxy Coating for the Interior and Exterior Surfaces of Ductile Iron and Grey Iron Fittings for Water Supply Service.

Q. AWWA C 605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.

R. AWWA M 11 – PVC Pipe Manual Design and Installation

V. NSF Standard 14: Plastics Piping System Components and Related Materials

W. NSF Standard 61: Drinking Water System Components – Health Effects

X. PLASTIC PIPE INSTITUTE (PPI) TR2 – PVC Range Composition Listing of Qualified Ingredients.

Y. PLASTIC PIPE INSTITUTE (PPI) TR3 – Policies and Procedures for Developing Recommended Hydrostatic Design Stresses for Thermoplastic Pipe Materials

Z. Texas Administrative Code (TAC) Rule §290.44 – Texas Commission on Environmental Quality Rules and Regulations for Public Water Systems.

1.04 SUBMITTALS: Delete Paragraph B and replace with the following:

B. Submit shop drawings showing design of pipe and fittings indicating alignment and grade, pipe length, laying dimensions, fabrication, fittings, flanges, gasket material, and special details.

C. Submit detailed calculations for pipe design.

D. Submit details of Pipe Joints and Jointing procedure for the PVC pipe.

E. For water mains submit the following:

1. Submit Affidavit of Compliance with (This Specification, and AWWA C900 or C905) for the PVC to be installed.

2. Submit Special Quality Assurance Testing (This Specification, and AWWA C900 or C905).

3. Submit certification of trained personnel performing fusion joining.

4. Submit design calculations for thrust restraint anchoring system, including connections to fittings, signed and sealed by Professional Engineer registered in the State of Texas.

1.05 QUALITY CONTROL: Insert the following Paragraph 1.05 D.

D. Pipe manufacturer to provide services of experienced, competent, and authorized representative to visit site to advise and consult Contractor during jointing and installation of pipe.

E. Technician Qualifications: Fusion Technician shall be fully qualified by the pipe supplier to install fusible PVC pipe of the type(s) and size(s) being used. Qualification shall be current as of the actual date of fusion performance on the project.

2.01 MATERIAL: Insert Paragraph J.

J. For Fusible Water Line (Liner Pipe)

1. Provide pipe which is homogeneous throughout, free of any significant voids, cracks, inclusions, and other defects, uniform as commercially practical in color, density, and other physical properties. Deliver pipe with surfaces free from nicks and scratches that are deeper than 10 percent of the minimum wall thickness.

2. PVC pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.

3. PVC pipe shall be blue in color for potable water use.

4. Unless otherwise specified, fusible PVC pipe lengths shall be assembled in the field with butt-fused joints. The Contractor shall follow the pipe supplier's written guidelines for this procedure. All fusion joints shall be completed as described in this Specification.

2.02 WATER SERVICE PIPE: Insert Paragraph C and D and re-number existing paragraphs C through E.

C. Pipe 14-inch through 20-inch in diameter: AWWA C 905; Pressure Rated 165 psi; DR 25 minimum; nominal 40-foot lengths; cast-iron equivalent outside diameters.

D. Pipe to be installed by open cut shall be in accordance with this specification, Paragraph 2.02 B, and pipe to be installed as liner pipe shall be in accordance with this specification, Paragraph 2.02 C.

3.04 FUSION PROCESS. Insert the following Paragraph 3.04.

A. Fusible PVC pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.

B. Fusible PVC pipe will be fused by qualified fusion technicians holding current qualification credentials for the pipe size being fused, as documented by the pipe supplier.

C. Pipe supplier's procedures shall be followed at all times during fusion operations.

D. Each fusion joint shall be recorded and logged by and approved electronic monitoring device (data logger) connected to the fusion machine, which utilizes a current version of the pipe supplier's recommended and compatible software.

E. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. This includes requirements for safety, maintenance, and operations with modifications made for PVC.

3.03 INSTALLATION. Insert Paragraph H.

H. Sliplining

1. Conform to requirements of Section 02551 – Sliplining Water Lines

2. Installation guidelines from the pipe supplier shall be followed for all installations.

3. Fusible PVC pipe will be installed in a manner so as not to exceed the recommended bending radius guidelines.

4. Where fusible PVC is installed by pulling in tension, the recommended maximum safe pulling force, established by the pipe supplier, shall not be exceeded.

END OF SECTION

Approved by: Arthur Morris

Arthur Morris, P.E.
Supervising Engineer
Engineering and Construction Division

Date: 2/19/2016

Section 02551

SLIPLING WATER MAINS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sliplining existing large diameter water lines via the installation of HDPE or PVC liner pipe.

1.02 UNIT PRICES

A. The measurement for sliplining is by linear foot basis along center line of completed water line including fittings.

B. Insertion pits, access pits (shown on drawings), connections to existing piping, fitting installation, embedment (bedding, haunching and initial backfill), field quality control (testing), grouting annular space, preparation of water line (inspection, cleaning build ups, corrosion, and obstructions or deformations), are included in sliplining unit price and not paid for separately.

C. Work will require dewatering of water line prior to rehabilitation. Payment for dewatering is on a unit price basis and includes all items necessary to perform work such that the water line or section of the water line is sufficiently dewatered for sliplining work. Contractor is to utilize adequate size and number for pumps to remove water in a timely manner. A minimum 6-inch pump should be anticipated for large diameter water line work.

D. Payment of sliplining is by linear foot basis for each size of pipe installed.

E. Refer to Section 01270-Measurement and Payment for unit price procedures.

F. Extra Access Pits, pits not shown on drawings, may be required, are to be paid for per access pit constructed, and includes cost and effort to cut and remove existing pipe and install pipe fittings for sliplining.

G. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.03 REFERENCES

A. ASTM F2160 Standard Specification of Solid Wall High Density Polyethylene (HDPE) Conduit Based on Controlled Outside Diameter (OD)

B. ASTM D 1784 - Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds.

C. ASTM D 1248 - Polyethylene Plastics Molding and Extrusion Materials.

D. ASTM D 2122 - Determining Dimensions of Thermoplastic Pipe and Fittings.

E. ASTM D 2412 - Determination of External Loading Characteristics of Plastic Pipe by Parallel - Plate Loading.

F. ASTM D 2837 - Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.

G. ASTM D 3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

H. ASTM F 714 - Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

1.04 DEFINITION

A. Sliplining: Rehabilitation of water mains by insertion of liner pipe into existing water line.

1.05 QUALITY ASSURANCE

A. All materials and equipment furnished under this section shall be:

1. From a manufacture who has been regularly engaged in the design and manufacture of materials and equipment for at least five (5) years.
2. Approved by the engineer before installation.

1.06 SUBMITTALS

A. Conform to requirements of Section 01330 – Submittal Procedures.

B. Shop Drawings shall comply with requirements of Section 01340 – Shop Drawings, Product Data and Samples.

C. Submit independent laboratory test reports certifying that polyethylene pipe meets ASTM D1284, ASTM D 3350, that fiberglass reinforced plastic (FRP) pipe meets ASTM D 3681 or that PVC pipe meets ASTM F 794 and ASTM D 1784, as applicable.

D. Submit inspection procedures to be used by manufacturer for quality control.

E. Submit grouting plan showing where grout is to be injected, materials and chemicals to be used in grout, anchoring methods, and planned grouting pressure.

F. Submit video inspection as specified in Section 02558 - Cleaning and Television Inspection.

1.07 TESTING

A. The City may have tests performed on field samples by an independent laboratory following applicable ASTM specifications to verify physical properties and characteristics of supplied materials. Provide product samples as requested by the Engineer.

B. The City will pay for tests on materials which meet specification requirements. Contractor shall pay for failed tests and consequent retesting.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pipe for sliplining liner pipe may be :

i. High Density Polyethylene (HDPE) Solid and Profile Wall Pipe per Specification Section 02505 (HDPE)

ii. Fusible Polyvinyl Chloride Pipe (FPVC) per Specification Section 02506 (PVC)

PART 3 EXECUTION

3.01 INSTALLATION

A. Cleaning

Make repairs and remove obstructions, tuberculation or build up prior to installing liner pipe.

B. Inspection of pipe

Inspect the host pipe prior to the installation of liner pipe as per Section 02558.

C. Insertion or access pits

a. Approximate location of primary access pits are shown on the Drawings.

b. Contractor is responsible for identifying extra access pits necessary for installation of liner pipe.

c. Locate secondary access pits so that the total number is minimized and footage of liner pipe installed in a single pull is maximized. Minimize disruption to pavement.

d. Project Manager to approve location of extra access pits.

e. Any modifications to traffic control plans for extra access pits will be contractor's responsibility.

f. Perform excavation of insertion or access pits in accordance with Section 02317. Refer to drawings for approximate location of primary access pits. Contractor is responsible for identifying extra access pits necessary for installation of liner and obtaining approval from the Project Manager.

g. Locate the underground utilities prior to excavation.

h. Follow OSHA standard and provide trench safety, if required.

i. Install and operate necessary dewatering and surface water control measures in accordance with requirements of Section 01578 – Control of Ground Water and Surface Water.

D. Liner pipe installation

a. Install the liner pipe by pulling or pushing through the host pipe. Perform end connections based on the type of liner.

b. Provide equipment to pull liner pipe with gauges or other devices to measure and limit pull force on liner.

c. Lubricants used to aid installation must be safe for potable water, and approved by Project Manager.

d. Where liner cannot be pulled through host pipe using appropriate lubrication, 90% of liner pipe manufacturer's maximum recommended pull force shall be used.

3.02 DISINFECTION OF WATER LINES

A. Conforms to requirements of Section 02514.

3.03 FIELD HYDROSTATIC TESTS

A. Conform to requirements of Section 02515.

3.04 FINAL CLEANUP

A. Upon completion, clean and restore project area affected by work.

B. Replace pavement and sidewalks removed or damaged by excavation in accordance with Section 02951.

C. Provide hydromulch seeding in areas of commercial, industrial or underdeveloped areas disturbed during construction. Bring surface to grade and slope of surrounding natural grade. Replace a minimum of 4 inches of topsoil in accordance with Section 02911 -Topsoil and seed the area in accordance with Section 02921 - Hydromulch Seeding.

D. Provide sodding in areas of residential land use disturbed during construction in accordance with Section 02922 - Sodding.

END OF SECTION